

REMARKS

Claims 1-15 are pending in the application and are at issue.

Claims 1-4, 6, 9-12, 14, and 15 stand rejected under 35 U.S.C. §102(b) as being anticipated by Shimomura et al. U.S. Patent No. 5,210,298 ('298). Claims 5, 7, 8, and 13 stand rejected under 35 U.S.C. §103 as being obvious over the '298 patent in view of GB 1,073,856 (GB '856). Apparently, the basis of these rejections is that the '298 patent discloses a supersaturated solution. Applicants traverse these rejections.

The patentability of claims 1-15 over the cited references was fully set forth in the Response After Final Action Under 37 C.F.R. § 116, filed May 29, 2009. For the sake of brevity, the previously presented reasoning is not reiterated in this response, but is incorporated herein by reference in its entirety.

The examiner did not find applicants prior technical and legal arguments persuasive, and issued an Advisory Action on June 4, 2009, stating the following as to why the application is not in a condition for allowance:

"The request for reconsideration has been considered but does NOT place the application in condition for allowance because of the reasons set forth in the Office action dated 02/10/2009 and because the arguments filed 05/29/2009 are not persuasive. Specifically, the applicant presents lengthy arguments tending to show that the prior art monomer solution is, allegedly, not supersaturated. The examiner has provided ample reasons to show that, according to the applicant's own description of a supersaturated monomer solution in the specification, the prior art monomer solution is inherently supersaturated. The applicant also states that a concentration of 35-40 wt% of partially neutralized acrylic acid in the prior art reference is standard in the art and that such concentration is not a supersaturated concentration (p. 8 4th paragraph). However, in the working examples in the instant application, the applicant discloses supersaturated solution of partially neutralized acrylic acid at a concentration of 40.68 wt% (See examples 1 and 2.)"

Applicants disagree with the examiner's comments, and provide additional arguments and factual evidence in the concurrently-filed Declaration of Marco Krueger (Krueger Declaration) refuting each of the examiner's comments in the Advisory Action.

First, with respect to the examiner's comments that the "prior art monomer solution is, allegedly, not supersaturated," the examiner relies upon Example 1 of the '298 patent as being a supersaturated solution. As stated *in* the '298 patent, the resulting solution has a neutralized ratio of 75 mol% and contained 37% by weight acrylate (column 8, lines 67-68). Other examples and controls in the '298 patent contained 35% to 40%, by weight, acrylate. The temperature of Example 1 is at or near 25°C from the disclosure at column 8, line 62.

To totally refute the examiner's contention that the solutions of the '298 patent are "inherently" supersaturated, applicants provide the Krueger Declaration, directed to the water solubility of 75 mole % and 100 mole % neutralized acrylic acid at 20°C, 35°C, and 50°C.

As clearly demonstrated at page 2 of the Krueger Declaration, 75 mole % neutralized acrylic acid, as in Example 1 of the '298 patent, has a solubility limit of 47.31%, by weight, at 20°C. This is *far* in excess of the 37%, by weight, in the '298 patent, and *far* in excess of the *greatest* amount disclosed in the '298 patent, i.e., the 40%, by weight, in Example 3.

The examiner's comments are clearly erroneous with respect to the compositions of the '298 patent being "inherently" supersaturated. To be supersaturated, at 20°C, the weight percent of 75 mole % neutralized acrylic acid must be *greater* than 47.3%, by weight. The compositions of the '298 patent clearly fail to meet this high weight amount of acrylic acid.

The Krueger Declaration also supports applicants' statement in their prior response, i.e., "[A] 37% by weight solution of 75 mol% neutralized acrylic acid is *not* supersaturated, but is within the normal concentration of a partially neutralized acrylic acid solution used in the preparation of polyacrylates. See Exhibit B, "Modern Superabsorbent Polymer Technology," F. Buchholz et al., ed. (1998), pages 74-755,..., and particularly page 75, last sentence of the first paragraph, i.e., 30%-43% monomer concentration for polymerization of partially neutralized monomer. All examples of the '298 patent provide an acrylate solution of 35% to 40%, by weight, *none* of which is supersaturated."

With respect to the examiner's comments that applicant's own description of a supersaturated solution in the specification demonstrates that the '298 patent compositions are supersaturated, the examiner is incorrect. As fully set forth in applicants' previous responses, the examiner confuses and commingles the features of degree of neutralization and supersaturation, and neglects the effect of temperature on the amount of partially neutralized acrylic acid needed to achieve a supersaturated solution. The Krueger Declaration shows that for both 75% and 100% neutralized acrylic acid, the point of supersaturation rises with rising temperatures (20°C to 50°C) from 47.31% to 48.37%, by weight, and 38.44% to 39.52%, by weight, respectively.

Applicants specification in no way leads a person skilled in the art to consider that the compositions of the '298 patent are supersaturated. Such a conclusion is completely contrary to standard information in the art, as set forth in previously provided Exhibit B, and objectively proven by the Krueger Declaration.

The examiner states that the working examples of the present application contain "partially neutralized acrylic acid at a concentration of 40.68%". This is absolutely incorrect.

Examples 1 and 2 of the specification contain the following: 254 g of deionized water, 339.2 g of 50%, by weight, sodium hydroxide (NaOH) solution, and 406.8 g acrylic acid (AA) for a total of 1000 g. Of this 1000 g, 169.6 g is sodium hydroxide, i.e., 50% of the 339.2 g sodium hydroxide solution.

This 169.6 g (4.24 moles) of sodium hydroxide neutralizes a portion of the 406.8 g (5.65 moles) of acrylic acid to provide a solution of 75% neutralized acrylic acid. The resulting solutions of Examples 1 and 2 therefore contain 500.08 g of acrylic acid/sodium acrylate, or 50.01%, by weight, of partially neutralized (i.e., 75 mole % neutralized) acrylic acid.

This amount of 75% neutralized acrylic acid is readily calculated as follows:

The 4.24 moles of NaOH neutralizes 4.24 moles of AA to provide 4.24 moles of sodium acrylate (NaAA), MW 94, or 398.56 grams of NaAA.

AA is initially present at 5.65 moles, so after neutralization of 4.24 moles, 1.42 mole of AA (MW 72) remains, or 101.52 g. Therefore, the amount of 75% neutralized AA in Examples 1 and 2 of the specification is 398.56 plus 101.52, or 500.08g.

It is readily apparent from the Krueger Declaration that this weight percent of 75% neutralized acrylic acid is *far above* the solubility limit for 75% neutralized acrylic acid, i.e., is supersaturated. It also should be noted that this is *far above* the 35-40%, by weight, of 75 mole % neutralized acrylic acid of the '298 patent.

In summary, each of the bases relied upon the examiner in the Advisory Action to maintain the obviousness rejection of the present claims is incorrect.

Therefore, for the reasons set forth above and in applicants' response of May 29, 2009, and because of the Krueger Declaration, claims 1-15 would not have been obvious to a person skilled in the art of the '298 patent, either alone or in combination with GB '856.

In summary, all pending claims are in a condition for allowance. An early and favorable action on the merits is respectfully requested.

Should the examiner wish to discuss the foregoing, or any matter of form in an effort to advance this application toward allowance, the examiner is urged to telephone the undersigned at the indicated number.

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Respectfully submitted,

By 

James J. Napoli

Registration No.: 32,361
MARSHALL, GERSTEIN & BORUN LLP
233 S. Wacker Drive, Suite 6300
Sears Tower
Chicago, Illinois 60606-6357
(312) 474-6300
Attorney for Applicant